2:Gough E-4, 5 (1947-1949)1961 A Wll Kerala A Wll
Central Kerala Nayar

nese (from at least the sixth century) and after 1498 the Portuguese, followed by the English, Dutch, and French (Logan, 1951, I: 251–254, 258, 294–399).

The coast falls roughly into three natural divisions: the coastal strip, the midlands, and the highlands rising into the Ghats (cf. Buchanan, 1807: 565–566). The coastal strip is flat and sandy. Its chief product is coconuts, with some rice and bananas. In the southern half it is broken by salt-water lagoons which for over a hundred miles form a continuous navigable chain parallel to the sea. Most of the chief towns are situated on the coast, divided by chains of little fishing villages. Many of the coast towns are ancient, and most of them lie at the mouths of navigable rivers which flow westward from the Ghats. From time immemorial raw materials, chiefly pepper, were brought by boat from the inland hillsides for shipment from these ports.

The midlands comprise low hills and fertile valleys. Broad strips of alluvial rice lands lie in the valleys, thinning out as the land rises into the foothills of the Ghats. On the hill slopes are gardens of coconut palms, bananas, pepper, ginger, and many fruit trees such as jack and mango. It was probably wild pepper which was exported in Roman times, but pepper and other spices have been deliberately cultivated at least since 1290 (Ricci, 1931: 326). Cashew nuts, introduced by the Portuguese, formed an additional export crop. Small merchant settlements, market-centers, and the military fortifications of petty chiefs existed at strategic points on river banks. Some of these centers grew into bazaar towns in the nineteenth century. But the mass of the population traditionally lived, as today, in scattered village communities on garden land surrounding or surrounded by fields of wet rice, the main subsistence crop. Wet-rice cultivation depended on plough agriculture with teams of oxen or water buffalo. Goats and chickens were the other significant domestic animals.

The highlands rising into the Ghats were covered mainly by deciduous forests. The foothills, interspersed with occasional rice flats, were sparsely populated by people of the same cultural groups as those in the plains. They eked out their wet-rice cultivation with garden crops of fruits, spices, and vegetables, with shifting hoe cultivation of dry grains on hillsides, and with forest hunting of elephant, deer, and pig. Higher in the mountains lived primitive tribes of hunters and shifting cultivators, having only occasional contacts with the kingdoms of the plains.

Throughout most of the area Kerala's rainfall varies between 75 and 170 inches, being heaviest in the north where the mountains are

8:Panikkar I-4, 5 (no date) 1918 AWll Kerala AWll Nayar

valent among them also. The more one looks into these matters the more one becomes clear that in the unorganised and uneducated human mind, be it "civilised" or be it primitive, there is a horizontal stratification of the most contradictory ideas, which lie absolutely undisturbed in the ordinary course of life. In the mind of the ordinary man whose *forte* is not clear thinking, a great deal of intermingling of such ideas might take place. It is no uncommon sight to see a thoroughly Hindu-ised Nāyar who talks about Absolutism and Illusion, and believes in them, paying a *Kāniyān* to get the devil out of his little niece. This is, perhaps, the truth which lies midway between those who assert, like Dr. Frazer, that magic and religion are hostile and cannot be reconciled, and those who, like Dr. Marett, hold that in their origin they are the same, that it is in their character as looked upon by society they differ. The view I have maintained here is that religion and magic are different in their psychological and emotional effects and that Dr. Frazer is right when he says that they are at bottom hostile. But the almost universal coexistence of magic and religion is due to the attitude of society which tolerates all contradictions and insists only on their effect being for social welfare.

VII.—THE MATERIAL CULTURE OF THE NĀYARS.

Occupation.—The Nāyars are at present an essentially agricultural population. The vast majority of them are peasant proprietors owning small farms. Rice and coco-nuts are the chief things cultivated, though in North Malabar pepper and cardoman have also their share.

With regard to these matters the Nāyars have attained a certain stage of excellence. Their coco-nut estates are planted with a considerable amount of scientific skill and they are proficient in the industries which are allied to coco-nut cultivation; such as coir-matting, copra making and extraction of coco-nut oil. The extreme fertility of the land has made agricutural chemistry, as far as coco-nut and rice cultivation are concerned, a matter of secondary importance; and even to-day there are very few Nāyars who have studied the Western methods of agriculture.

As each Nāyar family generally lives in a compound of its own, coco-nut cultivation is generally in small farms. Extensive coco-nut plantations owned by the same man are very few. The position is much like that in England before the Enclosures. Even if all the land in a particular area is owned by the same person it is seldom enclosed and transformed into one large estate. On the other hand, they continue to be regarded as separate compounds and the houses on them are generally occupied either by Nāyar tenants or by Pulaya slaves.

The fact that Nāyar families live in garden houses is one of great significance. Horticulture is practised with great interest in all families, rich as well as poor. It is, in fact, very seldom that any Nāyar family uses vegetables bought from the market.

This is mostly due to two reasons:
First of all, there is the joint family system which provides for all the members without distinction. Secondly, every Nāyar family lives on its own plot of ground on which coco-nut palms are grown, which bring in a small but quite comfortable sum.

The standard of life is comparatively high. Among the richer classes it is fairly decent, even according to the higher material standards of Europe, while, among the poorer clases, it never comes anywhere near the uncleanliness, the misery, the unrefined and uncultured barbarism which is the atmosphere of the slum life of the big cities of Europe. Poverty is less disreputable than in civilised communities, and the difference this makes is immense. The peculiarly civilised idea that success is the criterion of intrinsic merit, and that, consequently, failure by itself proves that it was deserved, is almost totally unheard of among the Nāyars. The fact that the individual members of a family have to pool their abilities and, to some extent, their personal incomes, prevents the sharp distinction between the rich and the poor which is so characteristic of societies organised on an individual basis.

Food.—The Nāyars are not vegetarians. Like all Hindus, they do not eat beef, but nothing else is prohibited. Fish is a favourite article of food, and there is an old couplet which sings:

> "*Kaini vāzhakkā Kari yunṭoru vaka*
> *Bhaṭa Bhojana maṭu Kooṭiṭilla.*"
>
> "Then there is a kind of banana of the seas (fish)
> And the Nāyars cannot live without it."

There is another couplet, which says:

> "There is nothing among the various kinds of food which equals the flesh of a boar."

The Nāyars are great epicures and they cook beautifully. Rice, of course, is the staple food, but milk curds, butter and *ghee* are things of equal importance.

Most Nāyar families have three meals a day. The breakfast, among the poor people, consists of rice boiled with water in the form of a pudding. With it is taken as relishes pickles, fried fish, cooked vegetables, etc. The next meal is at noon. The main course, of course, is rice. The first part of it is eaten with butter, boiled peas, and many other relishes. The second course is fish, vegetables, etc., mixed with rice. The third part is eaten with buttermilk, mangoes, and pickles. The supper at night is also a meal of which rice is the chief part. The thing about it is that, though the main course is the same as porridge among the Scotch, the variety, as well as the taste, of the subsidiary dishes is what makes all the difference.

Clothing.—The typical Nāyar (male) clothing is the *Mundu*. This is generally 2½ yards long, 1¼ yards broad, cloth of fine texture made at Eraniyal, in South Travancore. Nowadays, people wear cotton cloth from Lancashire, while the richer classes go in for Benares silk.

9:Iyer E-4, 5 (ca. 1902-1906)1912
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177
342 recently were thatched are now being tiled with tiles of European pattern manufactured either locally or in Mangalore.
342 In these days of comparative peace and security of life and
178 property from marauders and free-booters, the necessity for massive structures has ceased to exist, and, coupled with this, the improved notions of architecture, derived from an easy intercourse with more civilised centres, the rapid progress of education, and with it a better knowledge of, and regard for, sanitation and hygiene, have wrought remarkable changes in the construction of buildings, so that a better class of houses, well built, airy, and commodious, is displacing the old ones with their small, dark and ill-ventilated rooms.

351 As part of the surroundings of the dwellings in the same
[343] compound, there are frequently seen a cattle shed, an excavated
[312] tank for bathing purposes, often full of fish and water lilies, a
[515] well so arranged as to admit of water being drawn directly from it to the kitchen, an out-house *(matam)* for the Brahman
[574] travellers or visitors, and, lastly, a small edifice for the family
[343] deity. The gardens surrounding the houses are adorned with mango and jack trees, immense bananas, groves of cocoanut
[245] and areca palms and various kinds of flowers. Thus, in most places, their houses, which are occupied by fine types of humanity, (well made men and shapely women), are situated beneath the grateful shade of magnificent avenues of trees.

356 Four hundred years ago, a Portuguese traveller, writing
[175] on the subject, remarks upon the Nayar houses as being scrupulously clean and neat. Without any exaggeration it may be said that they are proverbially so, and the women are either naturally endowed with a taste, or are trained from early child-
352 hood, to keep the houses and everything therein neat and clean.
[556] Those of the richer and middle classes are in these days fur-
[177] nished with articles of European manufacture, and all their domestic utensils, for daily use, are made either of bell-metal, copper or brass, all well cleaned and washed early every morning.

415 The furniture of the poorer classes is very simple; a metal
352 pot with a spout, a few metal plates and saucers, a few metal
412 pans of different sizes, a spitoon of brass, a few mats, a knife,
184 a cot or two, a betel box, and a few wooden bins for grains, are nearly all the requirements of a household in this respect.

342 The house itself is called by several names according to
564 the occupant's caste, that of an ordinary Nayar being a *veedu*

11: India G-4, 5 (1960-1961) 1962 AW11 Kerala AW11

50 per cent higher than at the all-India level. Agricultural crops and the plantations, which form the main component of the primary sector, are largely produced for the market and are the basic factors responsible for imparting a high level of productivity to this sector.

1.26 Agriculture in the State is characterized by a high value yielding cropping pattern, good physical yields, a high intensity of cropping and superior cultivation techniques. During 1956-57 the intensity of cropping[1] was 119 per cent (all-India—113%). However, if field crops alone are taken into account, the cropping intensity shoots up to 150 per cent. It is the latter percentage which is the more relevant one, since the area covered by the perennial crops is irrelevant from the point of view of double or triple cropping. All these factors combine to make the agricultural sector of Kerala highly productive, the average level of agricultural output per net cultivated acre in Kerala being about Rs. 360 against Rs. 125 for the whole of India.

1.27 Kerala owes the superiority of its cropping pattern to the large number of high value yielding plantation crops grown in the State. Coconuts, the most important among these, occupy about 20 per cent of the gross cropped area and yield Rs. 450 per acre on an average. Other cash crops in the order of their importance in terms of area covered are pepper, rubber, arecanut, tea, cashewnut, cardamom, and coffee. Taken as a whole, they cover approximately 40 per cent of the gross cropped area.

1.28 Apart from the high productivity aspect of the plantation crops, they are of significance to the economy from two other angles. First, these crops provide the raw material for some of the key industries of the State. Coir making, the most important industry of the State, utilizes the outer husks of the coconuts. Similarly, cashewnut industry, the second most important industry of Kerala, also draws its raw material from the agricultural sector. Besides these, Kerala holds almost a complete all-India monopoly in the production of rubber, which is another important industrial raw material. Secondly, plantation crops derive their prominence from the fact that a large number of crops grown in Kerala find a good export market and are, therefore, very good foreign exchange earners.

1.29 One other feature of the Kerala economy which owes its origin to the agricultural sector may also be pointed out. Unlike the rest of India, where barter trade is still prevalent on a significant scale in the rural areas, Kerala economy is highly monetized. The large number of cash crops grown in the State are all brought to the market for sale. Secondly, since a high percentage of food requirements are obtained from the other parts of India, they are again channelled through the market. A high degree of commercialization of Kerala economy is one of the factors responsible for absorption of a large section of the population in the tertiary sector.

1.30 Otherwise agriculture in Kerala carries with it all the disquieting features common to Indian agriculture. The pressure of population on land is even severer here. The average size of holdings in Kerala has dwindled down to 1.5 acres

[1] Intensity of cropping is the ratio between gross cropped area and net sown area. It gives the degree to which a given piece of land is utilized.

11: India G-4, 5 (1960-1961) 1962 AW11 Kerala AW11

ginger should be stepped up. The proposed phyto-chemical plant at Munnar would also consume large quantities of raw ginger. The area under ginger cultivation can be extended by 20,000 acres and attempts should be made to raise productivity to one ton per acre through better cultivation techniques, seed selection and use of higher dosage of fertilizers. The likely annual increase in output from these measures is expected to be of the order of 33,000 tons in terms of dry ginger.

Oilseeds

2.33 Oilseeds, other than coconut, account for only a very small proportion of the cropped area, but there is scope for raising the yields and extending the area under these crops as a substitute crop in tapioca fields and in young coconut gardens. In addition, castor cultivation may be introduced in the State along field borders which are considerably wide on the banks of rivers and streams and on the borders of gardens and plantations. Assuming that the measures for increased production are reasonably well implemented, the additional production of edible oilseeds by 1971 would be of the order of 20,000 tons annually.

Banana

2.34 Since bananas need frequent irrigation, cultivation of this crop is quite popular in Kerala, especially on the banks of the rivers and near other sources of water. In view of the very high calorific value of bananas as well as good future demand prospects, the production of bananas should be increased. It is not possible to give an exact idea of the extent to which the area under this crop can be increased but there is scope for growing the crop more intensively in compounds attached to residential houses and in areas which receive the benefits of perennial irrigation.

Pineapple

2.35 There is quite a large demand for pineapples from Kerala, as they are good both in size and in quality. Location of a few additional canning units in the State is likely to add further to the demand. Steps should, therefore, be taken to increase pineapple production. There is scope for fresh plantings in the hilly slopes of Malabar, which at present contain only wild growth.

Lemon Grass

2.36 Lemon grass owes its importance to lemon grass oil which is extracted from the grass. Kerala produces over 88 per cent of the world output of lemon grass oil, most of which is exported. It is a good foreign exchange earner. The output of lemon grass oil has been increasing year after year in spite of unsteady and fluctuating market conditions. From a mere nine tons in 1920, the output rose to 1,400 tons in 1957.

11: India G-4, 5 (1960-1961) 1962 AWll Kerala AWll

2.82 Against this, the total amount distributed through organized institutions in 1958-59, was only Rs. 2.49 crores. This leaves a large gap which is probably being met by money lenders who generally charge high interest rates. Since intensive agricultural development programme as suggested here would require large amounts of working capital for the various types of farm expenses, the need for expansion of rural credit facilities through organized institutions cannot be overstressed.

PLANTATION CROPS

2.82 The predominant place occupied by commercial plantation crops in Kerala's agriculture, both in terms of area covered and net value contributed, has been stressed previously. In view of their importance to the Kerala economy, they deserve a high priority in the development plans of the State. The plantation crops of Kerala include pepper, cardamom, arecanunt, coconut, rubber, coffee and tea. Since most of these crops are perennial and have a time lag of 5-7 years between the stage of plantation and crop maturity, their future development programme should be viewed on the basis of a long term perspective of 20-30 years. The extension of area under these would not result in any immediate increase in output. However, quicker increases in production are possible from existing area under these crops through increase in yields per acre by the adoption of better techniques, etc. There is considerable scope for improvement in the methods of cultivation. It is thus necessary to devise, both short term and long term programmes for development of plantation crops in the State which are discussed below separately for each cash crop.

Coconut

2.83 Coconut is the most important cash crop of Kerala. Natural conditions in this State are ideal for cultivation of coconut. The crop thrives well along the sea coast and in the interior up to an altitude of 1,500 feet. Kerala accounts for about 70 per cent of the area under coconut in India and for over 80 per cent of the copra and coconut oil produced in the country. Coconut is important to the Kerala economy in a number of ways. First, the outer husk goes to support the most important cottage industry of the State, viz., coir industry. The kernel is used for edible purposes and in addition it is the mainstay of a large number of coconut oil millers. Coconut oil, in turn, forms a raw material for the soap industry. Directly and indirectly this crop provides employment to over 5 lakh persons.

2.84 Coconut is not a regular plantation crop since it is not grown on large tracts as in the case of rubber, tea and coffee. It is grown in scattered patches along paddy fields, river banks, backwater stretches and in the compounds of residential houses. In view of these complexities it is difficult to estimate the precise area under coconut but rough estimates show that the area under coconut in Kerala is about 1.1 million acres. The district of Kozhikode has the highest (250,884 acres) and Palghat the lowest (11,556 acres) acreage.[1]

[1] The figures refer to 1958-59 crop year.

2.85 The country is deficit in the output of coconuts and annually imports about Rs. 15 crores worth of copra and coconut products. This is a heavy drain on foreign exchange resources of the country. Even after imports the total available supply of coconuts is not enough and the oil millers are, therefore, hard hit by this shortage. The demand for this commodity is increasing year after while the production has been more or less stagnant at 3,100 million nuts. If this situation is allowed to drift unchecked, imports of coconuts will have to be increased progressively. In view of these factors, measures to increase productivity and the output of coconut are of extreme urgency.

2.86 Coconut cultivation in the State today faces a multitude of problems. The average yields are only about 40 nuts a tree per annum, that is, 3,000 nuts an acre, as against 60 to 100 nuts per tree in Philippines and some of the other Far Eastern countries. Moreover, the yield has shown no tendency to increase over the last 10 years. The focal point of coconut development programme, therefore, should be to break through the stagnant levels of productivity of coconut. The following discussion follows this line of argument.

2.87 Poor yields are largely due to the absence of regular and adequate manuring. The crop needs large quantities of manure. But the farmers, majority of whom are poor, cannot afford to spend on fertilizers which in the case of coconuts show results only after two or three years. Farmers, therefore, prefer to invest whatever resources they have in manuring the field crops which bring in quicker returns. Coconuts thus get neglected. In addition to starving the coconut trees of fertilizers, many farmers grow exhaustive crops such as banana and tapioca as an understorey. This practice exhausts the soil and it needs large funds and a long period ranging from 3 to 5 years, to rehabilitate such gardens.

2.88 To raise the yields, an intensive application of fertilizers containing NPK has been recommended by the Indian Central Coconut Committee. The Committee is of the opinion that fertilizers are more suited to acidic soils on which coconut is generally grown in Kerala. It estimates the cost of requisite fertilizers to be of the order of Rs. 93 per acre per annum but that is beyond the means of a small farmer. It is, therefore, suggested that the State should arrange to advance loans for the purchase of fertilizers, and these loans may be recovered after three years. To start with, 30 per cent of the area may be brought under this programme. The annual requirement of fertilizers would be about 26,000 tons of superphosphate. The programme would cost Rs. 3 crores per year, that is, Rs. 9 crores for the first three years after which the loans may be granted out of the recoveries. The programme may be extended to cover 75 per cent of the area earmarked for coconut during the Fourth Plan. Better manuring coupled with the necessary cultural operations, can raise the yields from 40 nuts to 60 or 70 nuts per tree which would thus amount to an increase of 50 to 75 per cent over the present rate of production.

2.89 Coconut crop is subject to a heavy incidence of diseases and pests. The diseases such as "leaf rot" and "root diseases" are rampant and widespread and have spread to six districts affecting over 30 per cent of the trees in the State. The annual loss of production due to these diseases is estimated at Rs. 2 to 3 crores. There is already a scheme in force to spray about 7 million trees in the infected pockets.

11: India G-4, 5 (1960-1961) 1962 AW11 Kerala AW11

But mere treatment of infected trees is not enough. The healthy trees lying side by side, or trees exposed to infection, should also be sprayed as a preventive measure. The proposed plant protection programme should cover the whole State in progressive stages by the end of the Fourth Plan. This would cost about Rs. 5 crores during the next 10 years, but a part of this may be recovered from the farmers as spraying charges.

2.90 Coconut is mostly grown as an unirrigated crop. During the summer months they are drought-affected in many parts of the State and drought has a telling effect on the trees. It is found that under irrigated conditions, the trees regularly give higher yields and there is very little premature shedding of buttons. It is, therefore, suggested that the Department of Agriculture should start popularizing irrigation of coconut gardens. Filter point tube-wells and pumping sets would be suitable as means of irrigation and the State should arrange for loans on easy terms for their installation.

2.91 The average economic life of a coconut tree is about 60 years. It is estimated that over 50 per cent of the trees in the State are over 50 years old and, therefore, in about 10 years, these trees would be past their economic life. Unless immediate steps are taken to replace the aged trees, the production of nuts after a few years is bound to decline in spite of all the measures suggested so far. A campaign should, therefore, be launched to replace old trees by fresh plantings.

2.92 There is not much scope for extending the area under coconut since most of the suitable area has already been brought under the crop. This is particularly so in the former Travancore-Cochin area. However, there is some possibility of raising new coconut plantations in the interior strip of Malabar along the foot of the western ghats. The Indian Central Coconut Committee estimates this area to be of the order of 100,000 acres. It is suggested that Government should make all efforts to bring this area under coconut cultivation. There are some difficulties in the way of bringing about the extension of area, for example, lack of adequate funds with the small farmers, and their preference for rubber plantations because they do not fall within the purview of the Land Ceiling Bill, etc. Some of these hurdles could be overcome if the State offers long term loans to intending farmers for the purpose of raising fresh plantations. Assuming that loans at the rate of Rs. 1,000 per acre are distributed, the total loan fund required to plant 100,000 acres during the next decade would be around Rs. 10 crores.

2.93. Production of quality seedlings from approved stock in large numbers is also necessary for the programme of under-planting and raising new plantations. The State nurseries, at present, have a capacity of 2.2 lakh seedlings a year. This capacity would not be enough to meet the future needs. It is suggested that the nursery capacity should be doubled during the Third Plan by starting 15 new Government nurseries. This would require an outlay of about Rs. 600,000 during the next two Plans. However, as even these would not be able to meet the anticipated demand, private nurseries may also be encouraged to produce quality seedlings in the different regions of Kerala. As a result of the improvements suggested above, the output of coconuts may be expected to double by 1970-71.

11: India G-4,5 (1960-1961) 1962 AWII Kerala AWII

Tea

2.94 Tea is foremost among the exports of Kerala and the second most important cash crop of the State in terms of net value contributed. It also employs the largest number of persons among the plantation crops. In 1957-58, out of the total exports worth Rs. 56 crores from the ports of Kerala, tea alone accounted for Rs. 24.3 crores.

2.95 The growth of tea plant is very much influenced by natural factors such as temperature and rainfall. A warm and moist climate with a temperature range of 55°-95°F, and an aggregate of 100 to 250 inches of well distributed rainfall are ideal conditions for the growth of tea bushes. It is grown at altitudes of over 2,000 feet above sea level and requires a well drained soil for anchorage and share of trees. The Wynad range (3,000 ft. elevation) of Malabar and Kannan Devan Hills (5,000 ft. elevation) of Travancore-Cochin area possess all these attributes.

2.96 Between 1951 and 1958 the area under tea in the State increased from 93,000 to 97,000 acres, that is, by 5.4 per cent. On the output side, the production of tea in the State during 1958 was 80.0 million lbs. as against 66.4 million lbs. in 1951, registering an increase of 35 per cent. The increase in production has thus been largely due to increase in yields between 1951 and 1958. By 1958 the yield rate reached a record level of 957 lbs. per acre. This increase has been steady and is higher than the corresponding all-India rise. However, even at present the average yield per acre in Kerala is lower than that in the case of other principal tea growing States of India such as Assam, West Bengal and Madras.

2.97 Higher prices and increased demand after the last world war gave an inducement to the planters to adopt intensive techniques of cultivation such as application of large dosage of fertilizers, better management and care. These have been primarily responsible for a larger outturn per acre. However, this trend is not likely to continue indefinitely as the bushes are getting aged. Experienced planters feel that with further improvements in cultivation techniques and increased application of fertilizer mixtures, it would be possible to raise the average yield to 1,000 lbs. per acre.

2.98 *Replantation*: The economic life of a tea bush ranges from 40 to 60 years and this makes it necessary to have a planned programme of replantation. Nearly half of the tea acreage in South India was planted during the early part of the century using Assam seeds. The remainder is the old China hybrid. Till 1953 only 0.72 per cent of the tea area had been replanted.

2.99 Replanting of tea had been neglected till recently. Most of the plantation estates were distributing the major part of their profits and there was very little ploughing back. The need for replanting on an appreciable scale received recognition only about 10 years ago but the situation has not improved still. Since no profits had been ploughed back to build up reserves, absence of replantation is largely explained by the lack of financial resources with the planters. Government aid in the form of long term loans for plantation, therefore, seems to be the only solution. The Plantation Enquiry Committee examined this problem in detail and recommended the creation of a fund for replantation. No action seems to have been taken so far.

Since this is a matter of all-India policy, the State Government should press the Central Government for an early action on this.

2.100 Tea estate lands are leased to growers by the Government. Most estates hold lands in considerable excess of areas which actually bear tea. Government should compel the lessees to undertake planting tea in all the suitable areas ; failing this, the surplus lands may be taken back from the lessees by the Government.

2.101 A programme of replantation of at least 10,000 acres per year would be necessary during the Third and Fourth Plan periods, specially to compensate for the past neglect. Fresh leases need not be granted for this purpose as there are vast uncropped areas adjacent to tea estates in the areas already leased. Pressure, inducement, incentives in the form of replantation loans and the supply of materials may be employed to achieve the desired results. Estimates of cost of bringing an acre up to the bearing stage vary from Rs. 2,150 to Rs. 3,650 per acre. Adopting the estimate of the Tea Planters Association at Rs. 2,500 per acre, the total investment necessary to raise 10,000 acres of new plantings per year for the next 10 years would be of the order of Rs. 25 crores.

2.102 *Size of the Plantations*: In 1957, there were 282 estates in Kerala. The average size of tea gardens in the State is 350 acres. However, about 50 per cent of the estates were less than 200 acres in area. For economic functioning of a tea estate, it is necessary to have a modern tea processing unit (generally known as a tea factory) attached to the garden. Different estimates show that to be an economic unit, a tea factory needs 822,000 lbs. (about 10,000 maunds) of green leaves a year and to produce this quantity anywhere from 250 to 300 acres of tea acreage would be needed. If this is accepted as a norm, it may be said that about half the tea estates in Kerala are uneconomic. This is indeed a serious problem, since the economic functioning of an estate as well as the quality of tea produced depends on the size and the type of processing machinery employed. An increase in the size of all the plantations with an area below 250 acres is necessary. Long term replantation loans and fresh leases of land, if available, are suggested as measures to correct the existing imbalance.

Rubber

2.103 Kerala holds almost complete monopoly in the sphere of rubber production in the country. Kottayam has the largest concentration of rubber acreage in India. During 1958, Kerala produced 22,159 tons of rubber valued at Rs. 7.69 crores, out of a total all-India production of 25,000 tons. The rubber plantations also employ a large labour force of approximately 80,000 persons.

2.104 Soil, climate and other natural conditions found in Kerala are quite well suited to the growth of rubber plants except that rainfall is not as well distributed over the year as in some other rubber growing areas of the world, such as Malaya and Ceylon. This factor has had a somewhat adverse effect on the yields, which might otherwise have been higher than the present level of 294 lbs. per acre.

2.105 During the last decade there has been a sharp increase in the area under rubber. Between 1951 and 1958 it increased by 90 per cent, that is, from 141,760

11: India G-4, 5 (1960-1961) 1962 AWll Kerala AWll

2.122 The development of pepper has not been receiving adequate attention. The crop was practically neglected during the First Plan. However, the high price of pepper which prevailed during early fifties provided a good incentive for extension of the area under pepper. The main work during the Second Plan was directed towards establishment of nurseries, extending the area under the crop and replacement of unthrifty vines with better ones. A total of 2,000 acres have been replanted so far.

2.123 It is possible to increase the yield of pepper from the present level of above one lb. to 2 or 3 lbs. per standard through intensive cultivation, better manuring, better varieties, and plant protection measures, especially against *follu* disease. Manuring of pepper has been a neglected field and with the application of fertilizer mixtures (3 cwts. of ammonium sulphate + 4.5 cwts. of super phosphate + 1 cwt. of muriate of potash per acre) the existing yields could be almost doubled within a year. Moreover, some extension of area under pepper vines can also take place in house compounds, as an inter-crop in small holdings and in tea and rubber plantations on land unsuited for the main crop.

2.124 Since pepper is primarily an export commodity, 75 per cent of the produce being annually sent out of India, its future scope is very much dependent on the foreign markets. After the last war, India emerged as a major exporter of pepper in the world. The USA was our largest importer, accounting for over 70 per cent of our exports. But, of late, other countries such as Indonesia, Sarawak and Malaya have begun to export larger quantities and as a consequence, the USA, now accounts for only about 20 per cent of our exports. The prices have also fallen from a peak of Rs. 4,158 per candy during 1951 to Rs. 677 in 1959.

2.125 The above evidence points to an increasing degree of competitiveness in the world markets for pepper, and India is fast losing ground to the new entrants. So far India has been able to maintain the volume of exports because of large off-take by USSR and other East European countries. However, demand from these countries cannot be expected to fully compensate for the likely fall in future exports to the USA and other Western countries. It may, therefore, be seen that for maintaining the existing level of exports, not to speak of increasing it, it is essential that Indian prices should be competitive.

2.126 Prospects for internal demand, on the other hand, seem quite bright. Between 1952 and 1958, internal demand rose by about 25 per cent from a level of 5,000 tons. In view of rising population and fast developing food processing industry, future internal demand is likely to maintain this trend.

2.127 Oleorisin, a pharmaceutical product, is extracted from pepper. A considerable amount of pepper in the western countries is used for extraction of this alkaloid. Oleorisin could be extracted in Kerala and an export trade developed out of this. This aspect needs further investigation.

Cardamom

2.128 Cardamom is the most expensive as well as the most delicious of all the spices. India produces about 70 per cent of the world output of cardamom. The

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*433 245 total area under cardamom in the State during 1957-58 was 69,658 acres, i.e., about 54 per cent of total acreage under the crop in India. It is grown in high ranges at altitudes varying from 2,000 to 5,000 feet under the shade of trees as an understorey. The crop requires more or less the same natural conditions for growth as pepper or tea.

2.129 Production of cardamom in the State during 1957-58 (1,242 tons of dry pods), however, was about 65 per cent of the total output of the country, which shows a higher per acre yield in Kerala than in the rest of India. Even within Kerala, [438] cultivation of cardamom is highly localized, Kottayam accounting for over 80 per cent of the area under cardamom in the State. The major cardamom growing areas in the State are: the *Cardamom Hills*, Nelliampathi, Wynad, and Vembanad.

2.130 There has been a noticeable increase in the rate of yield in Kerala during the last decade. It rose from 30 lbs. per acre in 1952 to 40 lbs. per acre in 1958. This increase has been largely due to better cultivation practices and manuring.

2.131 There was no plan for cardamom development prior to the Second Plan. During the Second Plan period research and development schemes for improvement of cardamom were initiated. It was proposed to evolve high yielding varieties and also to devise ways and means of controlling and eradicating pests and diseases which do harm to the crop. These are comparatively long term measures. To help further intensification of work on cardamom development, it is suggested that 10 additional nurseries should be established for raising and distribution of disease-free plants as well as for studying the local problems. Five to eight of these nurseries may be established in Kottayam and the rest in other cardamom growing areas. Cardamom yields could be raised by at least 100 per cent during the coming decade, provided the crop is adequately manured and reasonably protected against diseases and pests. There is a disease locally known as *Kattes* which does great damage to the crop. More vigorous steps should be taken to control and prevent this disease through intensification of efforts as well as through widening the scale of operations.

2.132 There is scope for extending the area under cardamom within the existing rubber and tea plantations, since some parts of unoccupied area in these plantations are suitable for cardamom. There are also some lands suitable for cultivation of cardamom under the jurisdiction of the Forest Department, mostly in the Silent Valley. It is suggested that the State should start cardamom plantations in such lands and, 20,000 acres may be put as the target for the area to be covered during the Third and Fourth Plans. At the rate of Rs. 200 per acre, the total investment for covering 20,000 acres with cardamom would be Rs. 40 lakhs.

Coffee

2.133 Kerala is the third largest coffee producing area in the country. With 41,123 acres and 3,000 tons of output per annum in 1957-58 it accounted for about 15 per cent of the area and 17 per cent of coffee production in the country. Coffee [132] thrives in the tropical belt lying between 25°S and 30°N of equator. It requires a rainfall of 60 to 90 inches per annum with a distinct rainy and dry season and an average temperature of 70°F. The conditions required for coffee growth are present

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to a considerable degree in Malabar and Nelliampathi (Travancore-Cochin) areas. The major concentration of area occurs in the Kozhikode district of Malabar. It had 89 per cent of the total coffee area in the State during 1957-58. Between 1955 and 1958, coffee production in Malabar rose (18%) while that in Travancore-Cochin declined (16%). Similarly, the area under coffee during the same period registered an increase in Malabar (28.3%) but declined in Travancore-Cochin region (15.0%).

2.134 The average yield per acre of coffee in Kerala is rather low. It has been lower than the all-India average and is far below the average yield in Mysore, the principal coffee growing State in India, (1955-56 Kerala, 285 lbs. per acre; all-India, 369 lbs. per acre; and Mysore 395 lbs. per acre). Moreover, while the yields elsewhere in India, especially in Mysore, have been rising, in Kerala they have fallen from 368 to 285 lbs. per acre during 1951–58. Within Kerala, the yields are the highest in Kozhikode district which is largely due to the better management of estates in this district.

2.135 One of the characteristics of coffee plantations in Kerala is the overwhelmingly large number of small estates. In 1958, there were 14,475 registered estates with a total area of 47,675 acres. Of these, 12,412 were of less than five acres in size. There were only 99 estates out of 14,475 with an area over 50 acres. (Table 14)[1]

2.136 There is a distinct relationship between the size of coffee estates and the output per acre. It is noticed that yields increase progressively as the size of the estates increases. The yield per acre of *Arabica* variety in estates in the size group of 5-10 acres was 0.68 cwts. per acre, while for the estates with 200 acres or more, it was 2.26 cwts. Moreover, the quality of coffee produced on small plantations is also inferior and fetches only 65 per cent of the price of coffee produced on big estates. It is difficult to ascertain the most economic size but it is believed that for effective and profitable functioning, the minimum size would be 50 acres. If this is accepted, then only less than one per cent of coffee estates in Kerala are economic. The question of making these plantations economic through consolidation or extension of area under coffee plantations should, therefore, receive serious attention. Two more points need attention. First, new areas should be planted with coffee *Arabica* rather than coffee *Robusta* since the former gives higher yields. Secondly, as in the case of tea, replantation is also over-due in the coffee plantations. Remedies on the same lines as suggested for tea hold good for coffee also.

2.137 Unlike tea, the major portion of which is exported, coffee plantations are substained largely by the demand for internal consumption. Internal demand, however, has not been keeping pace with rise in the output of coffee. At present India has quite a large surplus in coffee and efforts are being made to export the surplus. In spite of an enormous surplus of coffee in South America, efforts in India have yielded good results as shown by an increase in exports from 3,000 tons in 1952-53 to 15,228 tons in 1956-57.[1] Most of our exports go to East European countries. There is scope for stepping up the exports further, in spite of the world

[1] Source: Coffee Board, Bangalore.

2 [see p. 279, category 11b -- Analyst]

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glut since the better type of plantation coffee, for which India is well known, is in demand at a premium in the continental markets. At the same time internal market, about half of which is in North India is yet to be explored. This should also be developed.

2.138 Higher production can be achieved both through higher yields and through the extension of area under coffee. Increase in cultivated area under coffee is possible by fuller utilization of the estate areas. It is estimated that there were about 21,000 acres of land at the end of 1957-58 attached to the estates which were not being utilized for coffee cultivation. These could be planted with coffee. The cost of planting coffee and bringing it to the bearing stage is about the same as that in the case of tea, that is, Rs. 2,500 per acre. The total investment required, therefore, comes to Rs. 5.2 crores, which may be provided to the growers in the form of loans and the Government and the Central Coffee Board should help farmers in securing the necessary credit. The productivity per acre can be raised to 400 lbs. per acre by better manuring, larger application of fertilizers and efficient management of the estates. Efficient management, however, could become effective only after the size of the farms has been increased to a basic minimum.

Cashewnut

2.139 Cashewnut forms the main raw material for one of the major industries of Kerala. The cashewnut industry stands in importance next only to that of coir in the Kerala economy. In view of current shortage of raw nuts, which is adversely affecting the local cashew industry, measures to supplement indigenous supply are of great importance.

2.140 Cashew is grown on a wide variety of soils—ranging from coastal sandy to laterite hill top soils. It is hardy and drought-resistant but very susceptible to frost. In 1957-58, the total area under cashew in Kerala was 109,000 acres which is about 44 per cent of the total area under cashew in the country. Of this, the former Travancore-Cochin area alone accounted for over 71 per cent (77,481 acres), the rest being in the Malabar region. The production of raw cashewnuts in 1957-58 was 68,000 tons as against 54,000 tons in 1952-53, showing an increase of 26 per cent. The area under cashewnuts during the same period increased by only 1.8 per cent.

2.141 Cashewnut, at present, is rarely grown on a plantation scale. It is grown in compounds of houses, inter-spersed with coconuts, mangoes and arecanuts, and in outlying areas which are considered unsuitable for the growth of any other crop. When grown on plantation scale, about 60 to 70 trees can be planted in an acre, but it is not rare to find as many as 200 trees per acre in certain areas of Kerala. Such congestion, however, has adverse effect on output. Consequently, current yield per acre of cashewnuts (1,400 lbs. per acre) is much lower than what it could have been, had cashewnuts been grown on plantation scale. Under good conditions and in good season an acre may even yield up to one ton.

2.142 The scope for increase in the output of cashewnuts, through increase in yields or through extension of area, seems to be rather limited in Kerala. Raw nut is a low value commodity. Manuring the trees and spending on their maintenance,

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therefore, does not look attractive to the growers. In addition, in some parts where rubber can be grown, cashew is being slowly replaced by rubber, the latter being more profitable. Under these circumstances, since there is no incentive for farmers either to resort to intensive methods of cultivation or to extend the area under cashewnuts, it may not be possible to achieve any significant increase in their output within Kerala. There may, however, be some scope in Cannanore district, for not more than 10,000 acres. Most of this area would be on Government lands under the jurisdiction of Forest and Land Revenue Departments. It is suggested that the proposed plantation should be from clonal progenies of selected parent trees.

2.143 Assuming that 10,000 acres of land is available for cashew planting, total investment necessary to plant this area during 1961–71, at the rate of Rs. 100 per acre, would be Rs. 10 lakhs. The major extension of area under cashewnuts, however, will have to take place in the other States of India, mainly, Andhra Pradesh, Madras and Orissa.

Arecanut

2.144 Arecanut is an important cash crop of Kerala. The State possesses about 50 per cent of total arecanut area in the country. Arecanut is a high value as well as a labour intensive crop.

2.145 The total production of arecanut in the country is about 25 lakh maunds, which falls short of requirements by about one-third. This is made good by imports from Pakistan, Malaya and other countries. The need for conserving foreign exchange resources of India brings out the importance of increasing the production of arecanut.

2.146 Short term as well as long term measures are necessary to raise the output of arecanut. Short term measures are needed to effect a quick increase in the production. Long term measures are necessary for sustaining the gains achieved through short term measures as well as for effecting a progressive increase in the output over a longer period. Adequate manuring, irrigation, and prevention and control of diseases are some of the short term measures, while under-planting or filling in and extending area under the crop are the long term measures.

2.147 Considerable scope exists for raising the output of arecanut by providing irrigation in summer months. It is found that some of the well-managed irrigated gardens yield over Rs. 6,000 worth of produce annually as against Rs. 700 to 800 in unirrigated gardens. At present about 50 per cent of the arecanut area is solely dependent on monsoon rains and only about 25 per cent of the area receives adequate irrigation. Provision of irrigation facilities to arecanut gardens is, therefore, a prime necessity. Since the crop is grown scattered in the valleys and in patches on hill slopes and on small holdings, the irrigation development so far has not benefited the arecanut area to any extent. It is, therefore, suggested that the State should aid arecanut farms by granting long term loans for sinking wells and for the purchase of pumping sets. The gardens being mostly small, it may not be possible for individual garden owners to fully utilize the well and the machinery. This difficulty may perhaps be surmounted by organizing irrigation cooperatives for arecanut gardens.

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2.148 Manuring of arecanut gardens is grossly inadequate in Kerala. It is found that when the gardens are adequately manured and intercultured, the yields are high and there is much less of premature shedding. A combination of chemical (NPK) and organic manures has been found to give the best results. However, since arecanut is a tree crop like coconut, the benefit of manuring would accrue only from the third year of application of fertilizers. Most of the farmers are reluctant to wait for such a long time. Only cheap long term loans for manuring could bring a favourable change in attitude. In addition, as in the case of coconuts, a systematic replanting programme is also desirable.

2.149 Knowledge regarding the scope for extension of area under arecanut is too meagre to hazard any accurate estimate of possible future planting. However, there is a feeling that the area can be increased by at least 50 per cent, most of which will be in the Malabar region. But irrigation facilities are a pre-requisite for any fresh planting. It is suggested that 25,000 acres of new areca plantations may be raised during the next 10 years. The investment required up to the bearing stage is about Rs. 1,500 per acre. Total investment on 25,000 acres of new plantation would, therefore, be Rs. 3.75 crores.

2.150 Care should, however, be taken to see that all new plantings are done with improved seedlings. In order to meet the increased seedling requirements, it is proposed that five more State nurseries, apart from the present five, should be started during the first half of the Third Plan. This would need an additional investment of about Rs. 125,000. The strength of private nurseries could also be increased from the present level of 120 to 300 by the end of the Third Plan. Development programme for arecanut can, however, succeed only if it is backed by an efficient plant protection drive since diseases and pests are very common in arecanut gardens.

CONCLUSIONS

2.151 The plantation sector, as a whole, faces a multitude of problems in Kerala. Some of them are specific for particular crops such as devastating diseases in the case of coconut, arecanut and pepper. But many of the problems arising on account of inadequate replantation and under-plantation, low yield rates, lack of funds with growers for replantation and new plantations, inadequate supplies of inputs especially of fertilizers, wide fluctuations in prices and export markets are common to all crops. The State and Central Governments as well as the respective commodity committees or Boards are earnestly taking appropriate measures to solve many of these difficulties. Measures such as the provision of technical guidance, long term and short term loans at easy terms for replanting and manuring, export promotion, market research, compulsory gardening, and supply of improved varieties of planting material, etc., have been in operation for quite some years. The effect of these efforts, however, has not been very significant owing to inadequate size of the programme. This is particularly so with regard to loans for planting, subsidies and fertilizer allocations. The State should help in procurement of the necessary credit facilities and fertilizers, especially those containing nitrogen. It is suggested that at least a minimum of 350,000 tons

Chapter 4

Forests

FORESTS RANK AMONG the key resources of Kerala. Estimates of the area under forests differ widely. According to the Revenue Department figures, the area under forests is 24.58 lakh acres, that is, 26.2 per cent of the total area of Kerala. According to the Forest Department, the area under its jurisdiction is 22.28 lakh acres. Private forests account for another 4.80 lakh acres thus giving a total forest area of 27.08 lakh acres (30 % of the total area). Whichever be the correct figure, it is clear that the proportion of area occupied by forests is much higher in Kerala than the average for the whole of India (17.2%).

4.2 Apart from the importance of forests as a source of raw material for the industry, and timber for other uses, forests have a moderating effect on the climate and act as a vegetal cover protecting the soil from erosion. The position in Kerala is quite satisfactory in respect of the protective function of forests. A large number of perennial tree crops like coconut, arecanut, cashewnut and rubber are also grown in the State. Their effectiveness in protection of the soil and influence on climate is as great as in the case of the forests. These perennial crops, therefore, act as a useful subsidiary to the actual forest growth.

4.3 The quality of forest growth of Kerala is also of a very high order. During 1955-56, forests contributed Rs. 5 crores,[1] that is, 1.4 per cent of the State income, which is almost double the all-India average (0.7%). Per acre yield of forests is also higher in Kerala. Whereas it was Rs. 5.6 per acre on an average for India, it was as high as Rs. 18 per acre in Kerala during 1955-56. Employment potential of forests, however, is quite meagre in relation to the area they occupy. Forests in Kerala employed only 19,000 workers, that is, 0.35 per cent of the total working force (all-India 0.4 %). Forests generally require only a few hands to work as the maintenance staff and as labour for extraction and logging.

Type of Forests and their Regional Distribution

4.4 The high yield and the large variety of important commercial species grown in the State are a consequence of the climatic and topographical features of the State. Kerala gets the benefit of south-west as well as north-east monsoons. As a result of these, the State is well assured of a good rainfall which, in addition, is fairly well

[1]. Appendix 2 explains the method of calculation.

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Artificial Plantations

4.10 As mentioned already, in addition to the natural forests, Kerala also ranks high among the Indian States in respect of artificially raised plantations of valuable species. In fact the teak plantations were first raised in Nilambur as far back as 1842. The planting work had been regularly carried out with the result that there were about 75,000 acres under this species at the end of 1959.

4.11 Although Kerala can claim to have been a pioneer in the matter of teak plantations, a beginning with the other plantations has been made only very recently with the onset of the era of planning in the State. During the First Plan period forestry could be paid little attention. Effective beginning may, therefore, be said to have been made only during the Second Plan. Some of the plantations which have been recently started in the State are:

(i) *Cashewnut plantations*: Covering an area of 1,100 acres.
(ii) *Softwood plantations*: An area of 9,220 acres had been covered by the end of the Second Plan.
(iii) *Wattle plantations*: A beginning for raising this very valuable tanbark tree has been made recently in the Hamilton Plateau of the Devicolam range.
(iv) *Eucalyptus grandis*: Plantations of this species were started in the high ranges in Peermade and Munnar and have been showing very encouraging results. They form the raw materials for making pulp, which is used for manufacturing newsprint and rayon.

It will thus be seen that Kerala has made considerable progress in its plantation programmes and leads the other States, especially in respect of its teak plantations.

Forest Produce—Its Extraction and Utilization

4.12 Total quantity of major forest produce extracted from the forests of Kerala during 1958-59 through Government Agency as well as through purchasers is given below:

MAJOR FOREST PRODUCE EXTRACTED FROM KERALA, 1958-59

	Government Agency (cu. feet)	*Purchasers*
Rough logs	3,950,567	3,08,079 c.ft.
Rough poles	410,202	1,088 c.ft.
Sawn and Squared timber	144,802	—
Fuel	22,791	25,576 tons
Miscellaneous	1,626	Rs. 1,224,460 worth

The gross revenue through actual sales amounted to Rs. 2.44 crores and royalties on coupes sold to purchasers earned another Rs. 0.64 crores.

4.13 Extraction and stocking in the depots are undertaken by contractors but the actual disposal is done departmentally by means of auction. Standing coupes are also

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313 be so regulated as not to disturb the present symbiosis between the plant species present. Intensive research is, therefore, urgently required to find ways and means [65] of inducing adequate regeneration of the evergreen forests. There are at present two research stations in the State at Malayathur and Nilambur. The location of a third station in the evergreen forest areas is recommended.

Eupatorium

137 4.25 A problem that has been engaging the attention of the Forest Department is that of the weed eupatorium. It got introduced into the State from Assam at the end of the Second World War by some ex-service men who had served in Assam. The weed has spread like wild fire throughout the State and has become a serious [65] menace. Recent research carried out by a biochemist in Trivandrum has found a use for this shrub in the manufacture of fertilizers. Further research may be carried out to find its fruitful uses.

Tribals

*433 4.26 A few tribes reside within the forest areas. They are allowed free grazing 162 rights and privileges of cultivation, free of assessment. However, this does not provide 464 them with a full-time occupation. On the other hand, it is not possible to arrange for their migration to midland or the coastal region because of the high pressure of [245] population which exists in these areas. It has, therefore, been suggested in this Report, that two labour colonies should be formed in grass land *sholas* where large scale planting of *Eucalyptus Grandis* is taking place. This labour force could later be employed in the proposed newsprint mills when they come up.

RECENT DEVELOPMENTS

*433 4.27 During the First Plan period there was no forest development scheme. A 313 beginning in forest development programmes was made only during the Second Plan. 654 An amount of Rs. 1.24 crores out of a total Plan outlay of Rs. 87 crores was earmarked for forest development plans in the Second Plan period. By the end of 1959, however, only Rs. 21.68 lakhs had been spent. The shortfall arose mainly on account of two items. The largest single item among forestry was acquisition of private forests in Malabar and for this Rs. 40.95 lakhs had been allotted. Due to procedural difficulties, this could not be undertaken and only Rs. 0.34 lakhs had been spent by the end of 1959. Secondly, although the progress of cashewnut afforestation programmes in terms of physical target has been statisfactory, as can be seen from Table 24, the cost of afforestation programmes at Rs. 24 lakhs was an over-estimate. Actual performance has been possible within Rs. 4.81 lakhs.

4.28 Table 24 gives the Plan provision and progress in execution of various schemes upto the end of 1959. Overall progress has been slow, except in the raising of plantations where the Department hopes to achieve all the targets. The slow progress

[Table 24, appearing on p. 287 of the text, has not been processed - Analyst]

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number of items of minor forest produce. It is, therefore, suggested that a proper survey of the forest areas should be conducted to assess the extent of minor forest products available in the State. This will bring out the raw material potentialities for the phyto-chemical industry as well as other small scale industries which could be based on the minor forest produce of the State.

Raising the Long-run Forest Potential

4.38 There is not much scope in Kerala for extension of area under forests through afforestation programmes. There are already a number of competing claimants for land use. The proportion of area under protective vegetal cover, as discussed, is also quite adequate in Kerala. What is necessary is to minimize the extent of further in-roads into forest areas by clear felling for cultivation, etc.

4.39 Having ruled out large scale afforestation as a means of improving the forest resources, the only other possible methods, to augment the forest pontential are improvement in forest management and raising of new commercial plantations. Forests under the jurisdiction of the Forest Department are already being managed on scientific lines. The primary need, therefore, is the acquisition of private forests so that the standards of management could be enforced uniformly throughout the State.

COMMERCIAL PLANTATIONS

Teak

4.40 In addition to the existing 75,000 acres under teak, there are 640,000 additional acres of low quality deciduous forests which are suitable for conversion into the valuable teak plantations. This changeover will considerably improve productivity of the deciduous belt. About 9,000 to 10,000 acres can be taken up every year against 2,000 to 2,500 acres being planted annually at present. The technique of raising these plantations has been perfected in Kerala and the present agri-silvicultural method, whereby the plantations are raised free of any cost to the State, may be continued.

Rosewood

4.41 Rosewood is in great demand by the furniture industry. Logs of over 72" girth are also exported, mostly to Italy. The supply is getting exhausted and it is desirable to replenish the stock by raising new plantations. The tree is slow growing. It is, therefore, proposed that it should generally be raised on the periphery of the teak plantations where it can be left to grow for 2 or 3 teak rotations. There should be no extra cost as the plantations are to be raised along with teak by the agri-silvicultural method.

Softwood Plantations

4.42 As a result of the difficulties in the way of regeneration of evergreen forests, the softwood species grown in these forests are in short supply. By the end of the

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Second Plan, 9,220 acres had been covered by artificial plantations of these species. In view of the current shortage, it is proposed that another 45,000 acres be added to these plantations. 3,000 acres out of these may be kept apart for the matchwood species.

Sandalwood Plantations

4.43 During the Third Plan period, it is proposed to take up 1,000 acres of this plantation at Nachivayal, Marayr, and Maunanthura, in the Devicolom range. The general prospects for sandalwood in the State are not very bright but if some additional suitable areas could be located, they may be taken up for plantation during the Fourth Plan period.

Bamboo Plantations

4.44 The existing resources (para 4.32) are largely being consumed for local uses leaving only one-third of the overall supply as surplus for industrial utilization. In order to augment the existing supplies, it is proposed to raise Burma bamboo over an area of 1,000 acres during the Third Plan, by under-planting it in teak plantations in Nilambur area. During the Fourth Plan another 2,000 acres may be taken up.

PLANTATIONS OF FAST-GROWING SPECIES

4.45 So far, the trend of thinking has favoured an emphasis on the growth of plantations of hardwood species like teak and rosewood which find a ready demand but have got a long rotation period. Attention has only recently been focussed on the fast-growing species. In view of the growing pace of industrialization and the consequent steep rise in demand for forest materials, it would be desirable to supplement the long rotation species with fast-growing types which give the yields much more quickly. The three main species of this type which can be grown in Kerala are *Eucalyptus Grandis*, cashewnut and wattle.

4.46 The whole of the area under *shola* grass is suitable for conversion into *Eucalyptus Grandis* and wattle plantations. The productivity of these grasslands will be very much enhanced if these economic species are planted there. The success which has already attended the planting of eucalyptus promises a bright future for this species. These plantations can be extended over 25,000 acres during the next 10 years. The State Government proposes an allocation of Rs. 75 lakhs for the purpose of raising this plantation during the Third Plan period. The economic importance of eucalyptus plantations arises from the fact that they form the raw material for mechanical pulp and rayon industry.

4.47 The seeds for these plantations were first obtained from Australia. It is suggested that the advice of an Eucalyptologist may be sought through the Colombo Plan and the State officers may also be sent to Australia for training. This will help in perfecting the technique of raising these valuable plantations all over the grasslands in the State.

4.48 Compared to the eucalyptus plantations, the area over which wattle can grow is rather limited. This tree can only grow in the high ranges at elevations above 4,000 feet. The Hamilton Plateau in the Devicolom range is a suitable locality and there is a proposal to afforest, 5,200 acres during the Third Plan. The cost of afforestation is between Rs. 120 to Rs. 150 per acre. This plantation would supply the raw material for wattle bark extract industry. There does not appear to be much scope for extension of area under this species after the Third Plan period.

4.49 As these plantations are to be raised in the high ranges, it will be desirable to establish regular labour colonies and employ labour on a more or less permanent basis. Some agricultural occupation will also have to be provided to the labour force. It is, therefore, proposed that the establishment of regular forest villages in the grasslands should be seriously considered by the Government. They will also provide the much needed labour for raising and upkeep of the plantations and later for manning the newsprint mills which will be established at the end of 10 years. The exact employment potential is difficult to work out but it is estimated that the plantations will be able to support about 500 families, each family providing two able-bodied workers.

4.50 Cashewnut trees can be raised in the barren forest areas which are considered unsuitable for any other type of forest growth. In Trichur and Malayathur divisions, where these plantations are located, there are further tracts of barren unproductive reserves. Attempts at raising useful forest species having failed, these areas may be put under cashewnut plantations. If Malabar forests are acquired promptly, another 5,000 acres could be planted with cashewnuts during the next decade.

4.51 The technique of cashewnut afforestation is still in an experimental stage, but the highest success obtained so far has been with dribbling seed to a depth of 3 inches at a spacing of 30 ft. × 30 ft. which gives 49 plants per acre. Plantations raised at a spacing of 18 ft. × 18 ft. (125 trees per acre) have also given good results. Experiments on spacing should continue and the optimum spacing in different types of soil may be determined. The cost has been worked out at Rs. 35 per acre plus another Rs. 5 per acre as establishment charges.

Rubber Plantations

4.52 Rubber is one of the chief plantation crops of Kerala. The present area under rubber is roughly 2·5 lakh acres. Since rubber plantations provide a valuable raw material and a good source of employment in the primary sector, it is proposed to raise rubber plantations over a fairly large area of secondary forests. So far as protective functions of a forest area is concerned, this would be a change for the better, as areas under rubber are better protected than a forest and trespasses are not allowed. Other aspects of the problem are discussed in the Chapter 2 on Agriculture and Plantations.

4.53 The targets for additional acreage to be brought under different type of plantations, discussed above and the figures for investment required are summarized

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*433 ●245 in the following table :

Type of Plantation	Third Plan		Fourth Plan		Fifth Plan	
	Physical targets (acres)	Financial targets (Rs. lakhs)	Physical targets (acres)	Financial targets (Rs. lakhs)	Physical targets (acres)	Financial targets (Rs. lakhs)
Teak	20,000	15.0	40,000	30.0	60,000	45.0
Softwood	15,000	15.0	30,000	30.0	50,000	50.0
Grassland Sholas[a] (Eucalyptus grandis)	10,000	75.0	15,000	102.5	—	—
Burma Bamboo[b]	1,000	0.5	2,000	1.0	3,000	1.5
Cashewnut	1,000	0.5	2,000	1.0	3,000	1.5
Casurina and Matchwood on Coastal Perrumbavur	1,000	2.0	2,000	4.0	3,000	6.0
Wattle	5,200	7.8	—	—	—	—
TOTAL	53,200	115.8	91,000	168.0	119,000	104.0

[a] All grassland sholas would be afforested by the end of the Fourth Plan.
[b] Most of these plantations in the Fourth and Fifth Plans will be in the private forests acquired in Malabar.

SOME TECHNICAL IMPROVEMENTS

*433 313 4.54 The existing logging techniques and modes of extraction entail a lot of wastage of timber. Since there is a general shortage of timber, supply of timber from the forest areas could be enhanced by incorporating some of the improvements disscussed below.

Proper Seasoning Facilities

4.55 A large amount of timber at present goes waste or is used as fuel. This could be more economically utilized if proper seasoning and preservation facilities are introduced. Seasoning and preservation plants should be encouraged in all areas where there is a concentration of saw mills. This would make possible utilization of a large variety of secondary timber through upgrading them and making them commercially profitable. Government departmental rules may have to be modified to insist on the use of seasoned timber in place of the more valuable teak timber in all Government construction works.

Better Logging Techniques

4.56 The present methods of logging need to be mechanized, especially as a good network of roads exists through which mechanical saws, etc., can be taken to the actual coupes. The techniques currently employed are antiquated and involve a lot of wastage. With improved techniques, the extent of wastage could be reduced. [231] The extraction of timber by elephants in Malabar should be continued as it has proved to be cheap and quite efficient.

Ili: India G-4,5 (1960-1961) 1962 AWII Kerala AWII

TABLE 14

THE NUMBER OF REGISTERED COFFEE ESTATES ACCORDING TO SIZE AND AREA AS ON THE 31ST JULY 1958

(Area in acres)

District	Below 5 acres		5 to 10		10 to 25		25 to 50		50 to 100		100 to 200		150 to 200		200 to 250		250 and above		Total	
	No.	Area	No.	Area	No.	Area	No.	Area	No.	Area	No.	Area	No.	Area	No.	Area	No.	Area	No.	Area
Malabar	9,121	16,187	1,123	4,936	515	4,956	62	2,272	46	2,965	10	1,218	8	1,293	6	1,336	14	5,650	10,905	40,813
Kottayam	3,130	3,596	185	56	58	57	14	343	5	323	1	129	1	150	..		1	703	3,395	5,367
Cochin	5	..	2	..	..	..	1	..	..	..	1	125	3	561	2		1	330	15	1,016
Quilon	147	N.A.	2	N.A.	..	30	..	..	..	..	..	..	..	..	..	..	..	..	149	30

Source: *Eighteenth Annual Report, 1957-58*, Vol. IV., Coffee Board.

[113]

2455
423
184

13:Thurston & Rangachari E-4, 5 (no date) 1909
AW11 Kerala AW11
Nayar

always shade from the many trees and palms. Every house is in its own seclusion."

Concerning Nāyar dwellings, Mr. N. Subramani Aiyar writes that "the houses of the Nāyar, standing in a separate compound, have been by many writers supposed to have been designed with special reference to the requirements of offence and defence, and Major Welsh states that the saying that every man's house is his castle is well verified here. The higher ambition of the Nāyar is, as has frequently been said, to possess a garden, wherein he can grow, without trouble or expense, the few necessaries of his existence. The garden surrounding the house is surrounded by a hedge or strong fence. At the entrance is an out-house, or patipura, which must have served as a kind of guard-room in mediæval times. In poorer houses its place is taken by a roofed door, generally provided with a stile to keep out cattle. The courtyard is washed with cow-dung, and diverse figures are drawn with white chalk on the fence. Usually there are three out-houses, a vadakkettu on the north side serving as a kitchen, a cattle-shed, and a tekketu on the southern side, where some family spirit is located. These are generally those of Maruta, *i.e.*, some member of the family who has died of small-pox. A sword or other weapon, and a seat or other emblem is located within this out-house, which is also known by the names of gurusala (the house of a saint), kalari (military training-ground), and daivappura (house of a deity). The tekketu is lighted up every evening, and periodical offerings are made to propitiate the deities enshrined within. In the south-west corner is the serpent kavu (grove), and by its side a tank for bathing purposes. Various useful trees are grown in the garden, such as the jack, areca palm, cocoanut, plantain, tamarind and mango.

6:Spate N-4 (no date)1954 AWI India
Kerala AWII

sitional areas—Comorin, Shencottah, Palghat, parts of Malabar. The importance of food-producing trees (coconut, areca, plantain, jackfruit) fits in with this: they are grown in the house compounds, so that the actual dwelling-space subtracts hardly anything from the cultivation-space, while

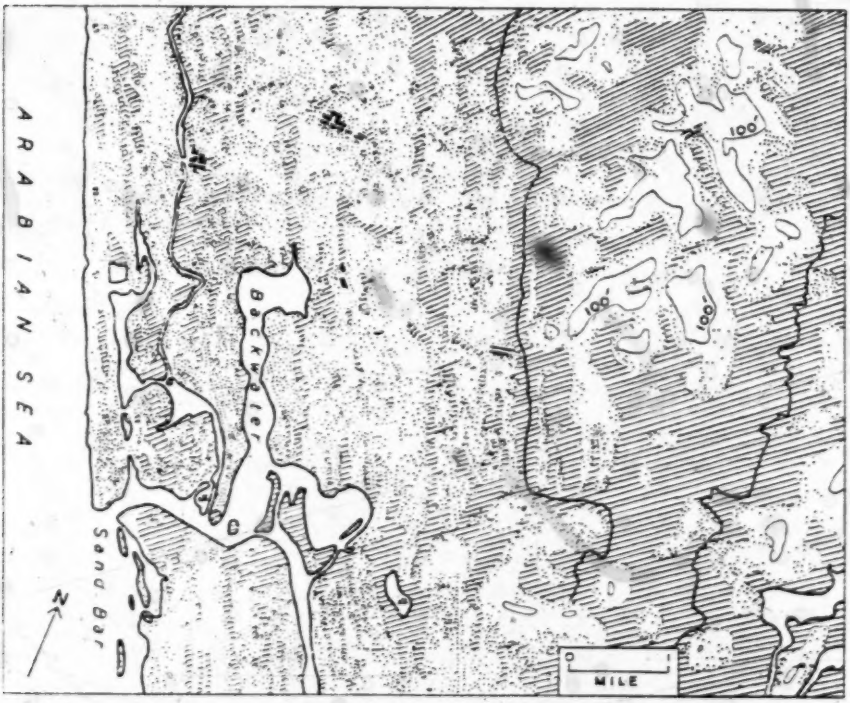

Fig. 122.—KERALA: COASTAL SETTLEMENT. 40 mls N of Cochin town. Dots, habitations; shaded, paddy. Note contrast between linear settlement on beach-ridges (under coconut) in W and ring settlement around lateritic rises in E. SOI 58 B/2; courtesy SOI.

at the same time the compounds ensure that the 'village' is loosely built, and may indeed spill all over the village lands. (Fig. 122.)[50]

Along the coast there is a marked linear tendency, houses and coconuts on the sandy ridges with their fresh ground-water, paddy in the lows. Inland the lateritic topography exercises a marked effect, settlement being strung out along valley-flanks or interfluves or forming a complete ring around the rises. (Fig. 123.)

[50] The 14th and the 20th centuries tell the same tale. "Mulaybar, which is the pepper country, extends for two months' journey along the coast. . . . there is not a foot of ground but what is cultivated. Every man has his own orchard, with his house in the middle and a wooden palisade all round it." (Ibn Battuta, *Travels in Asia and Africa, 1325–1354*, trans. H. A. R. Gibb (1929), 231–32). Along the 40 miles from Quilon to Trivandrum one is never out of sight of habitations or foot-travellers; G. Slater, *op. cit.*, 172.

31: Slater S-5 (1916-1917) 1918 AWI India

Between ages	41—50	11
"	51—60	9
"	61—70	9
"	71—80	10
84 years of age		1
92 "		1
		156

It is to be noted that infant deaths are more than half the total deaths and number 87 out of 156 last year.

This information is not fully accurate because the people do not report births and deaths generally to the village officials and consequently they have to ascertain the facts by inquiring and it is possible that some births or deaths escape their notice. The ignorance of the people and the unnecessary fear of post-mortem examination in the case of deaths explain their silence. Probably a considerable number of infant deaths escape report.

Paracheri.—Three families, 15 members.—7 women, 8 men.

Number of dead for the last ten years—

Family No. 1	7
" " 2	5
" " 3	4

The village lana—

	ACS.
Garden lands	792½
Wet lands	360¾
Dry "	135⅝
Government lands	14⅛
Inam lands	201¾
Total	1,504 17/24

There are no waste lands.

The principal fruit trees are mangoes, jacks, plantains, and there are not many though sufficient for the village consumption.

There are tanks and wells in plenty. Drinking water is got from wells; and the tanks are used for bathing and for agricultural purposes.

Occupation of land and Agriculture.—The number of kanomdars in the village is 385. The large kanomdars do not generally cultivate the land themselves.

The land is divided into small strips, each strip containing from 50 to 1,000 coconut palms. The large kanomdar takes his residence on one of these strips, and he himself cultivates the particular strip where he is, and gives to small tenants the remaining strips belonging to him. Consequently only about 180 acres of the whole village are cultivated by the large kanomdars. In addition to these lands three kanomdars cultivate all of their land. Two are Muhammadans and one a Tiyya. The area belonging to these three kanomdars is about 134 acres. The remaining land, 1,200 odd acres, is given to tenants to cultivate. There are also between 200 and 300 small kanomdars belonging to the agricultural classes, who hold land insufficient for their maintenance and also cultivate the lands of big kanomdars. A number of the big

286 yard in width and 1½ or 2 yards long. They find it difficult to maintain themselves with this work and also rent small plots of land, and some possess land. They use the unimproved hand-loom. There is no co-operation among them. They sell their cloth in the adjoining market of the village and do not care to send it to other villages. At times they take orders. They do not spin but buy inferior yarn from the market which gets its supply from Bombay through Cochin and Calicut and at times Ponnāni.

463 *Other crafts.*—

Sawyers	4 families.
Carpenters	11 „
Copper workers	1 family.
Iron workers	2 families.
Goldsmiths	7 „
Masons	10 „

These give their whole time to the craft.

Native umbrellas and baskets are made by all Pariahs.

[283] Rope-making—thick as well as thin—is carried on by nearly all the women of the Tiyyas and their sub-sects. Some women are wholly engaged in this work and they sell their ropes in the market themselves. The Pariahs make a peculiar kind of rope from grass, which is used for tying calves, and as reins for bulls. The rope is good and strong. They sell a rope for a measure of rice.

Leather work is done by one family which also practises agriculture.

These craftsmen have existed from times long past with no change in their condition or tools. There is no co-operation among them. Their capital is only their tools. They get sufficient work for their maintenance. There is no improvement with regard to their designs except in the case of the goldsmiths whose work is daily increasing and who are the only craftsmen who invent designs. The condition of blacksmiths is getting worse on account of the importation of foreign iron goods. His only work now-adays is to fit things, not to make them as of yore. He does not now make the nails, screws, iron bars, locks, knives, etc. These are bought from the bazaar and he fits them. But he makes all the tools necessary for other crafts and for agriculture. The same is the case with the coppersmith, but he gets sufficient work as people desire to get valuable vessels made in their presence. But his condition may be regarded as precarious. There is no change in the other craftsmen.

[283] Coir rope-making is the chief source of income for all the low caste women. They beat the soft cover of the coconut, after it is well soaked, into fibre, and twist it into strands, and the strands into ropes, in their hands. The rope is sold to the local shop-keepers daily. Some women themselves take the rope to the local fairs. Their work is increasing.

245 The other industry followed by a great many people is coconut oil-pressing. The whole Christian community with some others subsists on that work. They become tenants to big kanomdars and sometimes buy coconuts from others and extract the oil and sell it in the local market. Some big shopkeepers collect the oil and send it in large quantities to Cochin whence it is exported. One machine mill is already at work in a place

31: Slater S-5 (1916-1917) 1918 AW1 India
Kerala AW11

245 eight miles from the village, but the primitive oil mill is chiefly used, worked by two oxen. It is very cheap. Perhaps two rupees would be enough excepting for the oxen.

438 *The village trade.*—The chief articles consumed are rice, fish, vegetables, cereals and spices. The price of the total quantity consumed in the village may be estimated at Rs. 2,50,000, the total sales of the shop being Rs. 3,50,000, of which one lakh is to outsiders.

The quantity of produce taken to the market is not very great. The rice and cereals and spices necessary for consumption come from Palghat and consequently must be bought from the bazaar All other articles that are necessary, e.g., vegetables, fish, salt, chillies, oil, straw, fodder, fuel, etc., are brought to the house by petty traders or by the actual producers. In addition to this there is a weekly fair where local produce to the value of about Rs. 1,000 is sold weekly. A smaller quantity, which may be estimated at Rs. 36,000 per annum, is sold to shopkeepers and they sell to other villages. The people sell to shopkeepers only when they cannot sell in any other way, for the shopkeepers offer only a low price.

491 The main road comes from the Cochin State and passes through the northern and the western side of the village and bends and passes through the southern side. One branch road runs from the west and passes through the centre and ends at the eastern extremity of the village. The road system is not satisfactory. Other branch roads are wanted and those that are made have not been repaired at all for many years, though tolls are collected. People once complained of this to the Taluk Board but to no effect, although thousands of pilgrims visit this place every year on account of the sanctity of the temple. There are numerous by-ways.

498 The nearest railway stations are Pattambi, Trichur, and Watak-
505 kancheri, each twenty miles away. People go to Trichur by boat through the backwaters, and the steam boat that runs from Ponnāni to Tirur is availed of by many and it is cheap. There is backwater communication to Ponnāni and Cochin.

438 Copra, coir, etc., are taken or sent to Cochin and the people get in return rice, cloth, and cereals and other luxuries. Fish can be got from the sea, which is very near the village. The fishermen go every day in the morning and return in the evening.

465 *Economic condition of the village.*—Wages for artisans are always paid in money; for agricultural work both in kind and in money.

Money wages.—The ordinary labourers are always paid in money. In short all those kinds of labour which do not immediately bring fruit to the owner are paid in money. A labourer, for a full day's work, is now paid four annas; five or six years ago three annas. For short work such as carrying weights, etc., the wage is fixed for the moment and will vary according to the distance they have to go, etc. Generally two annas must be paid for one mile as an average. For carrying a bag of rice a high wage is demanded because of high weight.* Woman's labour costs three annas per day now, formerly 2½ annas, a boy's labour 2½ annas now, formerly 2 annas.

Carpenters get six annas a day, boy carpenters three annas, formerly four annas and two annas. Other artisans such as black-

* [160 lb.—Ed.]

31: Slater S-5 (1916-1917) 1918 AW1 India
Kerala AW11

241
463 toddy and jaggery and three carters who are mainly agriculturists.

651 The revenue for the year 1915–16 was Rs. 3,175–10–3. The assessment for fasli 1312 for the Amsam of Kothachira was Rs. 6,519–2–4. By settlement (fasli 1326) it is Rs. 11,228–7–0.

241 *Agriculture.*—We have mentioned elsewhere the names of the chief crops. Out of these, the two staple products are paddy and arecanut, the former being a field cultivation and the latter garden. The mainstay of the bulk of the population is arecanut. Every household of any worth is surrounded by an areca palm garden.

The method of cultivation pursued in both these is of an antiquated character.

245 1. *Arecanut.*—Mature fruits are selected for seeds. They are kept in pots and watered for one year. Next year they are planted and within a year and a half or so, they grow into young plants Then they are transplanted into the gardens where they have to be grown. They are planted in parallel lines, the distance from one another varying from two to three yards. The plants are at first placed in pits measuring a cubic yard. Some cow dung and ash manure are put, and a watering is given on alternate days in the summer. During the monsoon they are left to themselves. When the plants grow up into trees, the pit is filled up and a shallow basin round it made just to contain a few gallons of water. These are renewed every year in the beginning of summer, small channels are cut across the gardens to bring water to the root of every tree, water-lifts are erected and regular watering begun. This will continue until the advent of the monsoon.

243 2. *Paddy.*—On the first shower of the monsoon, fields are given a hasty ploughing and seeds are thrown. A fortnight of average showers helps healthy sprouting and the ryot prays for similar weather for another two fortnights to come. By this time, they have grown up into healthy plants. Between the second and third month of their growth, they are carefully unrooted and planted in plots prepared by ploughing for the purpose. Between the fifth and sixth month after sowing comes the harvest. If there is a second crop, the land is again prepared for sowing immediately after harvest and the whole process repeated. For this crop, the ryot depends on the north-east monsoon which gives two months of heavy rain from the middle of November to the middle of January. After this harvest the fields lie fallow for a period of two or three months.

651 A table given in the next page will show the areas under single
134 and double crop, different soils, and the nature of the assessments
311 on each. (The information is taken from the village accounts.) The assessment given herein is the revised one after the re-settlement.

31: Slater S-5 (1916-1917) 1918 AW1 India
Kerala AWII

• 245

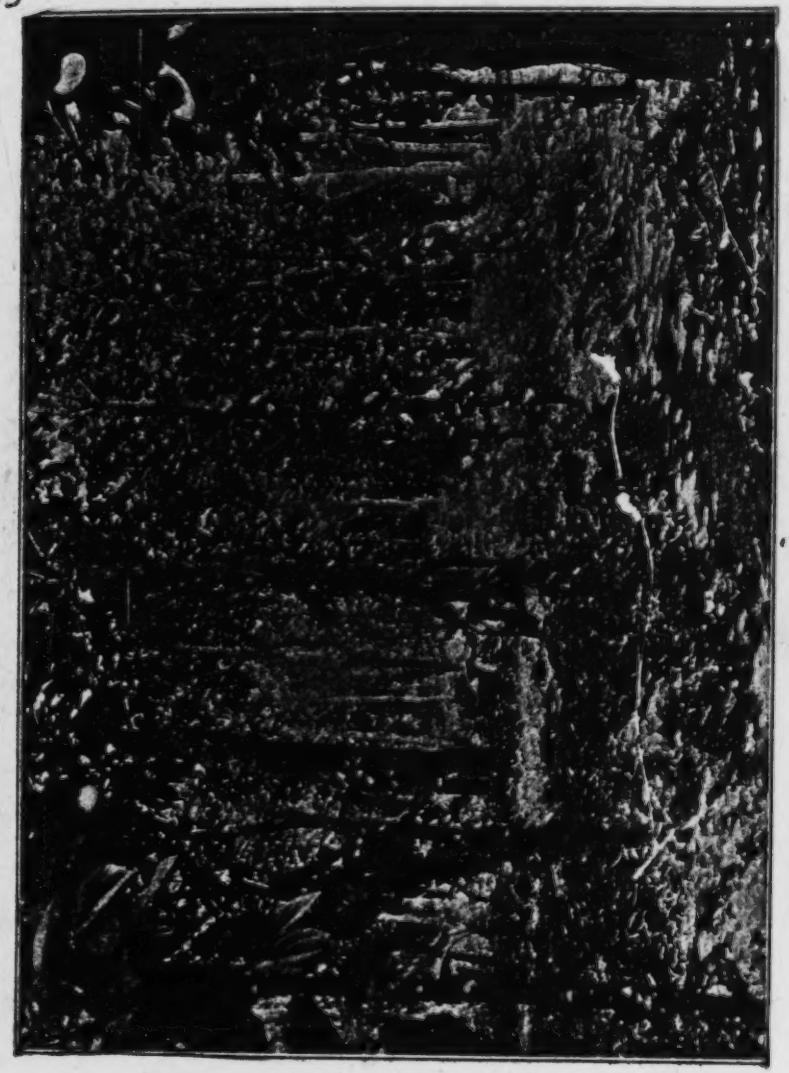

Photo by Agricultural College.

PEPPER GARDEN IN MALABAR

[facing p. 188]